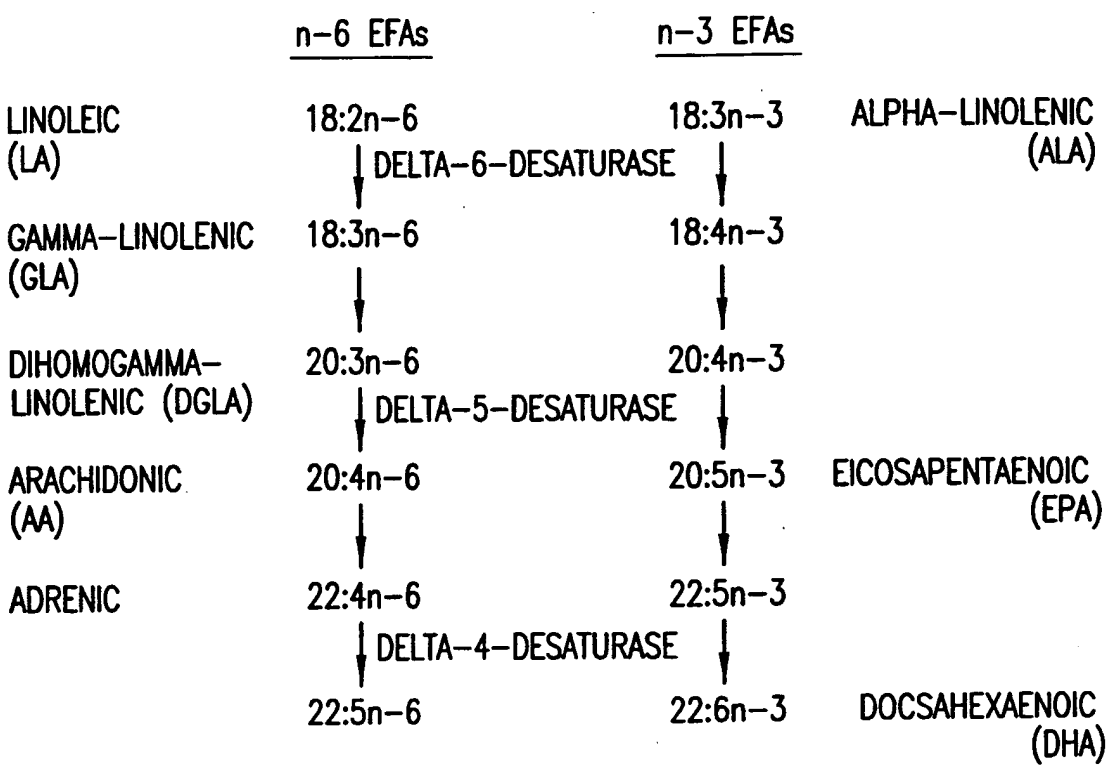
n-6 EFAs
n-3 EFAs
LINOLEIC (LA)
18:2n-6
18:3n-3
ALPHA-LINOLENIC (ALA)
DELTA-6-DESATURASE
GAMMA-LINOLENIC (GLA)
18:3n-6
18:4n-3
DIHOMOGAMMA-LINOLENIC (DGLA)
20:3n-6
20:4n-3
DELTA-5-DESATURASE
ARACHIDONIC (AA)
20:4n-6
20:5n-3
EICOSAPENTAENOIC (EPA)
ADRENIC
22:4n-6
22:5n-3
DELTA-4-DESATURASE
22:5n-6
22:6n-3
DOCSAHEXAENOIC (DHA)

FIG.1

```
   1  gctcacagac cgggactccg cctccggttc ccgagggcgt ggcgaggcgc
  51  tgcgggacgc ccaacaggtg cgtgttgtgt ccccaggccc cgcgctccgg
 101  gtggagtcaa gagcctggaa gccggcagcc cgggaaaagg gggcgggacg
 151  gtgccccggg gcagggctgg gtggcggccg ctgtcctccc gggaggggcg
 201  ggccgcctcg acgccgccct ccctggcggc caatggagac cgaggccccg
 251  cgcctggatt ggagcggacg cgggggtcag ccagccttgg gggccggggc
 301  ctggccgggg gcgggggggc aggcgaggcg aggcgggcgc cgtccgcgcg
 351  gttataaggc ggggagttcc ctgcgccgcg agccgggagg cgcacgctcg
 401  ctcgtacggc ggccgcggcg gcagggcggg gccggagcag cgggcggcgg
 451  cggaggcggc gcccgggagc gctCTTCGCT TCCCTCGGGG TCTTGCTCGG
 501  ACCTCGGCCA CCGCCTGGGA TCCCCAGGAC TCGTGCGTGC AGCATGGGCG
 551  GCGTCGGGGA GCCGGGACCG CGGGAGGGAC CCGCGCAGCC GGGGGCGCCG
 601  CTGCCCACCT TCTGCTGGGA GCAGATCCGC GCGCACGACC AGCCCGGCGA
 651  CAAGTGGCTG GTCATCGAGC GCCGCGTCTA CGACATCAGC CGCTGGGCAC
 701  AGCGGCACCC AGGGGGCAGC CGCCTCATCG GCCACCACGG CGCTGAGGAC
 751  GCCACGgtaa ggaagccata aggaagccac ccaccggcgg gtggagcctg
 801  gagctcggtc gtgggcgtga tgtcccgctc cacctgtggg gccttagcat
 851  cctccctccc ctcgctgacc tttgacctcc acgccgggac ccagagttgg
 901  ggtggactag ccagggccag atgtggggta gggagggcag ttccctgcgt
 951  ggaggacccg cagctgtcca cggagcaggt ctgcgggggа ggaggggcc
1001  tcagaggtgg gtgtgtcatg ctgcagagcc tgccctgggt gaggggctgc
1051  cctgttgctc ccaggtccct gtttcagttc tgggtcccca tgctgggtgc
1101  ttgctgagtg ctaggggtag ggcagggcag ggtccccagg ggccggtaag
1151  gacatgccat tagaggctgg gggctgggcc ggcctgaggt ctgtggcttt
1201  cccaagagct tctgtaaagg gctcagggac agtgactcac ctctccgggc
1251  tagcagctgc acgtgggagg gctttgccag ccaggctggg tgggcctctc
1301  ctggaagcac agtcacccca ggaacaggct ggcccctggg gaccccaact
1351  tcccaatccc agcccctgtc tagacaggca gggatgtagc ctggccccag
1401  ggtactgtct ggctggagtc cagtggtgga gcagcccgac cagccccttt
1451  tccttagtta cccacctgca taataggggt tggggccacg atgccctgtc
1501  cttgaccctc caaatttcta ggttggccac actgggtatc aggaaggtct
1551  tcaagacccg aggacatgaa tcctgaatgc tggctttttg ggcagcagcg
1601  gaggttctgt ccagtcccag gactgtcggc gtcctcttg ccagggccac
1651  ctgctctctg ccgattgcca tctccagcat gttggacaat cttcactgga
1701  ctctttgagg aagaaagccc ctcttttccc tttccacccc atgaagctga
1751  ggagtgagaa taagaatcct cctgaaattc taaaaaaaga aaaaaaaaaa
1801  aaagagaacg ccttgtccgt ggctgttcag gcgccagacg ctggcccgag
1851  gggacagcac agccgtggga tgaagcagcc tgggggcagt atttgagcgt
1901  gcaggtgttt gcatgtctgg gtgagtgtgg tgtgtgtgcc tgcctttctg
1951  ccagggcgtg gcgaggtgag gggcacggct tctccccaaa ggccttgctg
2001  agccctggcc tcccttcaag gagtcttgtg gatgcctgct ctggtctttt
2051  tttaaaaaag tatctatttt atttattatt atttgtttaa aaatagagac
2101  agggtctcac tatgttgctc gggctggtct caaagtcctg ggttcaagca
2151  ttcctcctgc ctcagcctcc gaaagttctg ggattacagg catgagccac
2201  cactcccggc ctgctctagt cttttgtaac ctagaggaca gtatggatac
2251  agaaaacttt actccccacc aaccgccgga gacagagtct tgctctgcca
2301  cccagactgg agtgcaatgg cgccatcttg gctcactgca acctccgcct
2351  cccaggttca agcgattctc ctgcctcagc ctcccgagta gctgggatta
2401  cgggcacgcg ccaccacgcc cagcatattg tatttttagt agagacgggg
2451  tttcaccatg ttggccaagc tggtctcgaa ctcctgacct cgtgatccac
2501  ccacctcggc ctcccaaagt gctgggatta caggcgtgag ccaccacgcc
2551  cggctgggat acagaaagct tttatttcat cactgtttcc tgcctggtgc
```

FIG.2A

2601 caggcccatg ctggggttcc tcccaagtgg aattactgac ttaacattta
2651 gcttgggatc ctgagacttc catcacacag ttttctcatt gattcgcagc
2701 caataatatc tgttttaaaa acatctcagg ccgagcgctg tggctcacac
2751 ctgtaatccc agcactttgg gaggctgagg tgggcagatc acctgaggtc
2801 gggagtttga gaccagcctg accaacatgg agaaaccctg tctcttctaa
2851 aaaaatacaa aattagccag gcgtggtggc gcatgcctgt aatcccagca
2901 ctttgggagg ctgaggcagg agaatcgctt gaacccagga gacggaggtt
2951 ccggtgagcc gagatcgcgc cattgcactc cagcctgggc aacaagagca
3001 aaactccgtc tcaaacaaac aaacaaaaaa catctctctg ctccttgggg
3051 ccgggtgcca gctctgctat tggaggcact gagcgacctt gaagcaggca
3101 tgtcactcct ctgtgcccca gtttactcat ctgtaaagtg ggagagctgg
3151 ggcagacagt gagctggctg agggcaggac tgtgtctcct caagcccatg
3201 gcccagggct gccaggtagt agtttgtatt cggtaaatgc tgctggcccc
3251 taagtgtgag cgtgccctgc aaactgcagc gtatggtggg acagccctgc
3301 acggctaccc ctttcctggg tgaccttatt tggttacggt cctatctgaa
3351 gtaggaaagg gacactttag gctgtctctt agctccctca aggccccaca
3401 gcctggacta gagttgccag aaatacttgg tccattcagg ccaaagggac
3451 tgtgaggttg ctgggatggt gcaatcagtc tttgtccatg atgaacccac
3501 agggtagacc aggggttggg ccagcccagt gccctgtgta gttgagccca
3551 ggccccaggc atcccatccc gggcggtggc ctcaggtgga ggtggggcag
3601 ccagttgcca gggatgtgtt ccagcggtca cctctcacca gccccggctg
3651 cccatcagct gttctcaagt ccaggcaatg aagccttcct gccaggaaat
3701 tcccagagtt tctgtgccat gaagtcagcc tgtggccatc ttgggacaca
3751 aggccgggtg ccctggggag agtactctgg gcccttggcc aggtttgtct
3801 gagagtcata ggcagcctga tactagtgga gccagccagg gagggatgag
3851 gcccagccgc tgctggccat aagtatataa gggccatgtg ctgagtgcct
3901 actatgtgcc aggttttgaa atcagtactt gatttattga aaccctctct
3951 tttaatcctc aaggtgcccc tatgaggcac gtaccattta ttgttattgc
4001 cacttgacag atgagaaaac agaggctcag agaggcaaag tggcttgaaa
4051 ttcagtgatt ggtctgggat ttgaatccac agccatgttc ttaagggcat
4101 gctatgctgc cacctatcct gtttatttcc ggcactcatt gattcttcaa
4151 tgtttgactc attaaatcca tcagtgagca tcttctctgt gtcatgcatg
4201 gttctcacct ctgaagatgt agctgtgagc aaaacttcta cagggaatga
4251 gttcacagca gagggatcag ctagagcaaa ggctcagagg tgggaccgtg
4301 cgtcctgtgt tccaggaata cagtatggct gcagcagaga gcagtggaga
4351 gagggcctgg cagtgaggtc tagaggcggc cgggctggct catgctggat
4401 gtttgtgtcc tcggaaggac tttggcttta ttttaaagag gatggggagc
4451 cccagagagc acagcaggga agcctgggga gtctgatgga catttaaaag
4501 gatccttaat ggagagagtg aaggcagagc cttccagaag ggtaagagaa
4551 gggaggatgg agacctgccc tcccccaagg gaggccactc agaagaggta
4601 gagtgtggcc agggcagaga gcaagagagg ctgtggacac aggcacactg
4651 gtccagtgag agccattaga cacattagat ttagcttcat gttgtcttta
4701 gagagggagc cagcctggcc tcgctctatg atcttggaca catcctttca
4751 cttctgggtc tcagtttccc cattagtgtg atgaggatga gaatgctttt
4801 gtcctgggca cactatgagg gtggtgctgg gcacctgggt gcctggttac
4851 catgggcaac aaagctctat tcatgggtgt ggtgaatgca ttgcccacag
4901 caactcaggg cggatgagga gtttcccagc agcccctggt gccctttcgg
4951 ctgaagccct aacaactgtg ggaaaatcca agttccagca gacccccctga
5001 gccctctgcc ttaggaccct ccttctaggt ggttctctga gcctggcctg
5051 agctggagga gggagtggcc agtgctgcag cagaggctgc ttcatagtaa
5101 ttgcagccaa cagttattga ctaggcactg ttctgagggg tttagatgtg
5151 gtaactgatt gaattcgcct aacaacttta tgaggtaagt cctattgtta
5201 gcccattttg tagatgagga gactgagttt gaaactgggg ggtgtaatgg
5251 aaccttctca ggacccttga agggtagggc ctttgtactc gggccacgag

FIG.2B

```
5301  ggtggggttt gtgtctgggt gggagctggg gagggacagg actaggatta
5351  ggcagatctg aggccacagg agttggttgg ggggtggctc cagagccact
5401  ccactccctc ctaccacatt gactgccttg aaagtcccct aatggccact
5451  cccatgaagt gtgactgctc tgggctcccc gcaggcgttt tctgcaaggc
5501  caccgcccac ccaggcccct tccccagagg ggctgcagtg ccttgctcct
5551  tccttgtggg aagagttggg attgtctggc gtcagcagga tactgccccc
5601  gggcatccct cccggtctct tcctgcgggt ttctgatgaa acagccaggc
5651  tccagtagtg gagccagagg tcagtggtgg agagaggacc aggagccaga
5701  gggtatagct gctttggggc tactgtgggg tcagggacac ttgtgaggcc
5751  aagcgtcctg gctgcaggag ccctcacata tatgcccacc cttcaccagg
5801  acattgaggg gtgctggggg acaggggtag ctttttgggg gtgtctgcct
5851  tcgacttggg ctccgctaca caggccaaat ttggatgtcc catgtttaga
5901  gctgtgtttc tttgggacct cttggggcct cagtttcctc atctgtaaaa
5951  tgggatactg atagtgcttc cccactggcc tcctctgacg ggcgccaggg
6001  agaggatggg acggagcatg gtgtgctggg cacgctcctg ctgtacccac
6051  ccacctggga gaggggagag gcaggaatgt cctgggggtg tcctttgagg
6101  catagccctg tcaccccaac atcctacaaa ggcatgagaa ggcagcgagg
6151  acagaccccg accacctgag ccctcagcag ccctgccaca ctccctgctt
6201  cacccccttc ctgactgatc tggcacattc ttgattctcc tagggagtga
6251  cccaaaatcc ctccctgccc tgctgtgtct ctggggtgga aggaggctgc
6301  cagcccctcc tctctcccag cctcaggctt ggccaggact taacaggcag
6351  gcagagaagc agcttctcca ctctcttccc tgacacctgt aggcccctcc
6401  tgcaggcact tacctctaag tggactctca ggaggaggct catcagggct
6451  gcagggctca gaaagagctg ggctgtggag ctcttgccaa ccgccaggcc
6501  ccttctaagt gctttagcgc caccgactgc atcctcccag cagccttgtg
6551  agatggggat ttgtggttcc cagtttactg atgagaaata ctgatgagag
6601  atgggtgtgg tcttgtctgg ggctccctgg ctcctggata gcagctcagg
6651  ttccatcctg ggcaggctgg ctctgggaca ccccccccgac cagctgctgt
6701  gtgggattca cggtggggct tgggcagggc gtgggatctt ggggccaact
6751  gagccactct aggcttccag ggaccaaggc caggctgagc tgtctctgta
6801  tcctgagaga gcatgaacat cacagaagat gggcccgggt tcgaatccca
6851  gctctgccac tactaactgg gacctgggca ggggtcccct cccgctgagc
6901  cttcatttcc tcaccagcaa aatggttcgt gcccctgctt tgggggctgt
6951  ggagggttgg ctcttgtcta cttgttcata cctgctgttg agcagctgct
7001  ctgtgccggc ctctgaggat gccactgtga acagagcctg tcgctacctc
7051  caggagcttg tgtttagggg tgccgttttg attccagcac tttcacccag
7101  ctctgctccg gtacccgatg agagacgtcg agtgccgctt tccactcgct
7151  tgggtgcgtg tgggggttgg ggggacaggg ctttgtgcac gtagccctgg
7201  gtggatgttc ctgggtgcac ttagggtgtg tgagggtggg acctcccaca
7251  gttccctgag gctccactga tgaggtccaa gaaccgcctt cctgcccccc
7301  agcccaggct cccagcagct gggcccttgg cttcttgaga tagtgactgg
7351  cctcacggca aggacccccg cacaccacct aggagaactg ctgcttcccc
7401  tctgttccag gagtggcgac aagcacagtt tttcgctttt gtttttgttt
7451  tcttcacttt aagttccggg aaacgtgcag aatgtgcagg tttgttacat
7501  aggtatacat gtgccatggt ggtttgctgc acccgtcaac ccctcatcta
7551  ggttttaagc tccatataca ttaggcattt gtcctaatgc tctcctctcc
7601  cttgcccctc acccgcccag taagccccgg tgtgtgatgt tcccttccct
7651  gtgtccatgt gttctcattg ttcaactctc acttatgagt gagaagagac
7701  ctggactctg atctaacctc ggtcaaatgg aactgtgtga ccttgaagaa
7751  gtagcttaac ctctctgagt cttagcttct gcctggcacc cccatcctta
7801  aggagaggcc cacagaggac caggtcacat gacctcagcc agttccagag
7851  aaggctgttt gcttccaggt ttcggcctga gtccaggccc ctgccctact
7901  cgcactccct gatagcatga gaagcacagc cccagggtgc ccacccagct
7951  ctgagagccc agcctgcttc ccagggaact gtcacagccc cacctgtccc
```

FIG.2C

```
 8001  ttccccagct ggagccctgt caatggcttt ggggttctct gacacagccc
 8051  tgaggggget cacacttccc cttatcattg caaggggtag atctggcttg
 8101  aaggccctgg ggcaggcttg gttctgtcct cccctgtcag tgcctcgaca
 8151  gggctggcct gggtgaatca ggaccaacgg gaaaggaggc gaggagacca
 8201  atctggaccc aagatcctca gctcaataag gtggccccag aactgacatg
 8251  gggtgataga gggaagggct gggagggagg agattctggg gccgcagcca
 8301  cagcttgcac gttgcgccgg gtgtgtctgt gcgtgccagc tgcatctttg
 8351  cgtaccatgt gtgcaaggct gtgtttggct gagtgttcat gtgggccgtg
 8401  attgtgggca tgtttctgag tgtctgagtg atgcctgctg gtgtgggctg
 8451  gtgggtgtgt ctgcatgtgc gtgtgtgtct ggggagtttc aaaggagaaa
 8501  gagggactca ccatcacgct ggctcagcct taaaaaggta ggacatcctg
 8551  acacgtgctg caacatggat ggaccttaag gacattgtgc tgagtgaaac
 8601  aagccagagg caaaggaaca aacatgtgat ttctcccaga tgaggtttcc
 8651  ggaggaggca gatctgtatg gacagaaggt agcatggtgg ttgccggggc
 8701  agggggagga gagaatggag aattagtgtt taatggggac agagtttcag
 8751  ttggggaagg tgaaaaggtt ctggagctgg atgatggtga tggttggaca
 8801  acactgtgca tgcacttaat accactgagc tggacaccta aaaatgctta
 8851  caatggtaaa tttcatgtat attttactac aatttttaaa aaattggctg
 8901  ggcgtggtgg cttatgcctg taatcccaac actttgggag gccaaggcgg
 8951  gaggattgct tgagctcagg agttcaacac cagcctgggc aatatggtga
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 9051  acctctaatc ccacctactc agtaggctaa ggcacaagaa tctcttgaac
 9101  ctgggaggtg gaggttgcag taagccgaga tcatgccact gcaacccagt
 9151  ctgggcgaca gagcaagact ctgtctcaaa aaataaaaga taaataaaaa
 9201  aattagaggc caggtgtggc tcacacctgt actctcaaca ctttgggagg
 9251  ctgaggtggg aggatcgctt gaagtcaggc atttaagaca tgcctaggca
 9301  acatagtgag accttgactc tacaaaaaaa ttcaaaagtt aatgagacat
 9351  ggtggcatgt gcctgtagtc ctagctgctg gggaggctga ggtgggagga
 9401  tcacttacga ccaggatttc aaggctgcag tgagctgtga ttgcatcact
 9451  gcactccagc ctggtgacag agtgaggccc tgtctcaaaa aaatttttca
 9501  gtgtttttct gggctgggcg tggtggctca ttcctgtaat tccagcactt
 9551  tgggaggctg aggtgggtgg attgcttgag cccaggagtt taagaccagc
 9601  tgggcaacat ggcaaacctc atctctacaa aaaataaaaa taaaaaatta
 9651  gctgggcatg gtggtgcaca cctgtactaa cagctacgag agaggctaag
 9701  gtgggaggat cacctgagcc cgggaggttg aggctgcagt gagccatgat
 9751  tgcaccactg cactctagcc tgggcgatac agcaagaccc tatctcaaaa
 9801  aaaaaaaaaa aaaaaaaaaa aaaaacaccc agtggggtca gtagaacccc
 9851  aagagtcttc ttccctccca gctcccctgt acaccagccc cagctctgca
 9901  ggtagctggg ggcccagaca gcttcctggg gacccccagc cttccctctg
 9951  ccctttttte taccagtttt gctgcccctc cttcaagact catgtccaga
10001  gggggtgaga tctgcactta tacagccccc tcctctgtaa tgagtgagcc
10051  aagtcagccc aggttattcc agaaggggca ccctaccagc cccccagtcc
10101  ccaagctgcc ctgggcctat aaaagcaggc aaggggaccc ctagtagatc
10151  atgtaggtgt tacctcttag tgggtgctgg aggggcctga agtgctttct
10201  tcccccaggg tggtaggaga atgtcctggc agtgacttca gggcccgctg
10251  tcacttccgt tttaagactc accagctggt aggctcatta gcaagaggac
10301  aataggaggc ccctgtcctc agtcagcttt cttcaaaggt gtttccttta
10351  gcaactggga ggcctccctt ctccagaccc atggggacaa caccacccag
10401  ctactggttc tataagctgc tgtatggctc tggctagccc attcagagaa
10451  agcctctgaa agtacaagga aaaaaatcag tccaagagct gtgaacaatt
10501  agtgagccga ttacaatacc aagaccacag gcagacctgg aaggctaagt
10551  gagcccaggt gtgaagttca agcttacttt acttctgggc cacttcctgg
10601  ctggtctctt tccctggccc ttatctttct cctggtctgt cttctcttct
10651  caccccctttt ctttactctt tcttccttct cctgcatcgt actccacccc
```

FIG.2D

10701 cactccagct attacacaga atcgcgagaa tgttggatta ttcattttat
10751 ttatgatgtt ttctttttg taaaaataga gacaaggtct cactatgtgg
10801 cccaggctgg tcttgaactc ctggcctcaa gcaatcctcg tgccttggcc
10851 tcttacagtg ctgggattac agatgtgagc caccatgcct ggcccatttt
10901 atttacttta aaaaaaaaat taggctgggc gcggtggctc acacctataa
10951 ttccagcact ttgggaggcc aaggtgggca gatcaactga ggtcaggagt
11001 taaagaccag cttggccacc tggggtcagg agtttgagac cagctactcc
11051 ggaggctgag accggagaat tgcttgaacc caggaggtag aggttgcaat
11101 gaactgagat catgccattg catgccagcc tgggcaacag agcaagactg
11151 tctcaaaaaa aaaaaaaatt atgttttgtg ctcctgcttc ctgctttgta
11201 agtcaaatca gtttaactgt tcaagtgtct tccttgcaaa cccccaagga
11251 ctcaatgtgt gtcgcccttg actgatcccc ccgccccgtg acccagtggt
11301 cctcagttcc aggttttccc acctaccctt cacccactgc ttatgtttat
11351 aaaaacgggg taaatcaaat gttcgtgacc cagatcttat tctacatgca
11401 gtggaaactt gtatgactta agctttttgg aaaagcagaa cctttttttcg
11451 tggttcaaga aatcaaagtc ttcccgggag gtctttctgt aaatccagag
11501 ctgcagatgt ttgaccgtgt tcagagaggg gcccttgtgc tgggtgaagt
11551 ggatggggca cagcaggcaa tgggtgaaaa gcaggacaac ctggggccct
11601 gggaggacca gggagggccc atgtctttga ctgttcatca gccggctgac
11651 ttcctgtccg cctgtcgtct gctctgccca tccatccgta gtccttccgc
11701 ctgtctctgc tggttgccgc tgtgctactc agctgtgtct gtctgtccgc
11751 ctgactgtct gctctccttc agGATGCCTT CCGTGCCTTC CATCAAGATC
11801 TCAATTTTGT GCGCAAGTTC CTACAGCCCC TGTTGATTGG AGAGCTGGCT
11851 CCGGAAGAAC CCAGCCAGGA TGGACCCCTG AATgtgagcc agagccctag
11901 gagaggctca gcccctgagg gaggggggatg gctggagggc tgggagacat
11951 tgccacatgg ccaggagcag ctccctcggc attcgcccaa ggggatgcag
12001 agccagggct gagcctgccc tcccctccca gggggcaggc agttgaaagt
12051 gaagctgtag ggatgccctg agaagtccag ggctccagat ctggtttagc
12101 caggcactcg tttggatccc gaggcaagct ccctccctgt tgtcgcccag
12151 tgtccccatc aaaaggagga ttttgatgaa ctgatttctc tcctggctgt
12201 agcgtcttac ccaccccata ccttttggga gggagaggag gcttcaccac
12251 cagccagtgc tccagctcac accccgggct gggtactctt gtcacttcat
12301 tcctctttgc ccacacccct tgggcctggc gatgggagga gcggctgggg
12351 ctccaggaga atgggggtgg ggaggaattt cttccttggc tgatcggccc
12401 ctctgctatg gcagGCGCAG CTGGTCGAGG ACTTCCGAGC CCTGCACCAG
12451 GCAGCCGAGG ACATGAAGCT GTTTGATGCC AGTCCCACCT TCTTTGCTTT
12501 CCTACTGGGC CACATCCTGG CCATGGAGGT GCTGGCCTGG CTCCTTATCT
12551 ACCTCCTGGG TCCTGGCTGG GTGCCCAGTG CCCTGGCCGC CTTCATCCTG
12601 GCCATCTCTC AGgtgacccc agttctgtgt tgcagccacc ttaactgccc
12651 aacagacgtg ggcccccatg catctgggca ttgtgaacat atttgctaaa
12701 tgaatgaatg gacctatgaa aggatgaatg gatgaataaa cagatgaatg
12751 agtgaacagt ctgaaggccc atcaggcatg tctgtgggtc aagctgcatt
12801 ccagatgagc caagaagttc cttcttgaac agattccgat caagcacagg
12851 gccactgagc cagaggctgc tgccctgcag cttcatgaca cttacgagcc
12901 cctccacctc cctgggactc agttctcatc tgtaaaaaga ggacactggc
12951 ccacaagggt cttgaaatgg agcattagca cgggggtacc ctgcaagctg
13001 aaaggattca ctggggcccc aggccctggc gggctccgtc cttcccaaca
13051 gcttctgacc ctgcctctct ccccagGCTC AGTCCTGGTG TCTGCAGCAT
13101 GACCTGGGCC ATGCCTCCAT CTTCAAGAAG TCCTGGTGGA ACCACGTGGC
13151 CCAGAAGTTC GTGATGGGGC AGCTAAAGgt gagggtgggg tgggtggtca
13201 gccaggtgct gggtggcgct gggtctgccc aagtgtgtgg gcacagtcgg
13251 gggcacagcc tgccctgaga gccccctcct cctccacagG GCTTCTCCGC

FIG.2E

13301 CCACTGGTGG AACTTCCGCC ACTTCCAGCA CCACGCCAAG CCCAACATCT
13351 TCCACAAAGA CCCAGACGTG ACGGTGGCGC CCGTCTTCCT CCTGGGGGAG
13401 TCATCCGTCG AGgtgggtgg ggagggacct ggacaacctc tggctgggcc
13451 tgcagctgag ggggagctaa tgcactgggt ccccactctg cccctgacct
13501 agcccctgat ctggcctcca ctctggctgg gccaagctct gccccctgtg
13551 ctttccttcc cacctcccaa cctgctgggg acgaccagcc cgcttgctag
13601 aatctagagt tgcctttgac ccttggcccc agccagcccc gtgaccttgc
13651 ccgggagaag gaggtggcct ggagagctgc tgtctccagc cgccgcctgt
13701 ctccacagTA TGGCAAGAAG AAACGCAGAT ACCTACCCTA CAACCAGCAG
13751 CACCTGTACT TCTTCCTGAg tgagtgtcca tctgtccttc tggggtgggg
13801 gagtgcctgg gcctgcactg tcctccctgc tgtcctggac cactcccagc
13851 cacttcctgg ggcggggcac gtctgtcagg tctccctggt catggcatcc
13901 tcccagcctc tgcagtctgt acacactctc ccagcagcat gcctttgccc
13951 cagctgtctc ccgtgcctgg gacaccttgc agccacgggc catcacagcc
14001 ctgctgggag cttccccaag ccccacgtag aatttcttct tgccctcact
14051 agagtggtcc ggagccctag agtctttggg cagttgttgg ggcggacaga
14101 gtgaggactc aagtctggcc ctgacttgcg gtgaagggtg gtgggaggtg
14151 gtggggtaag ggcagcctgg ggaggcttgg acacagaatt gggggtgata
14201 tggggtcatt cagctggatg tgaccagcac caacgtccca ggggcattcc
14251 tggagtaaca gagcccctca ctctggcgcc cactcacctt ggcagcccag
14301 ccccactcct gaacactctc atgcccttc ttgcagTCGG CCCGCCGCTG
14351 CTCACCCTGG TGAACTTTGA AGTGGAAAAT CTGGCGTACA TGCTGGTGTG
14401 CATGCAGTGG GCGgtgagtg gggttgccca ggaccccggg catacggctg
14451 ccgtggcagg aggtggtgcc tcgggggaca gtacctgccc atgaaggcaa
14501 acagggtgca catgtgcgtg caacagtgtg gctcacatgt atgcgtgcaa
14551 cagtgtggct cacatgtgtg cgcgcagcag gagagcgagt gtgcccgtga
14601 ctgtacgtgt ggtgggggggg ggttgaggaa caggggggt gtgggtctct
14651 ctcggtgagg gtgtcttccc aggaggagtt gctgggccga ctctgccagg
14701 catctgtgtc cctggcaggg tcttccccaa cacaccctgc atgacacctt
14751 cgtcactaaa atcagcctcg tgagctggca gggcaaggac cctgttcctt
14801 tactcagctg agaaaaccag agagggtggt ggcctgtcct gggctctgag
14851 gcaaatcagg cagaagggtt ggatgcctga ggtcctcctc ccacccacca
14901 ggcctccaga cctccgggca cctggagacc tctcggtatc gcctctgccc
14951 tcctctgcag GATTTGCTCT GGGCCGCCAG CTTCTATGCC CGCTTCTTCT
15001 TATCCTACCT CCCCTTCTAC GGCGTCCCTG GGGTGCTGCT CTTCTTTGTT
15051 GCTGTCAGgt atggcaggga gtggcgaggt cacacacagg cgacaggtga
15101 cccccactgc agccccccac cagagcttcc cttttcccgt ctgcagaatg
15151 gggccagtgg tactgcctcc ctggcttgct ggtggaatca cataaacaca
15201 agcgtggcag gagcccaggg tcggtgggtt tagggagcgt ggcctggctt
15251 gtaagtggcc cggtgggtgt cggagctgct ctggactcag cctcacagtg
15301 gacactgctc cattcagatt ctttaaacac tggcaagggg gcgatggcca
15351 caatcctatt gtacagataa ggaagtcaag gccacttggg gacagctgct
15401 ctccagcctc cactcagggt gcctaagtgg tgagctggac ctagggcagt
15451 gcccgagcct ccccacagGG TCCTGGAAAG CCACTGGTTC GTGTGGATCA
15501 CACAGATGAA CCACATCCCC AAGGAGATCG GCCACGAGAA GCACCGGGAC
15551 TGGGTCAGCT CTCAGgtggg cagcaggggt ggggcccatc ctgggtgggg
15601 tgggggggtcc cagctaggag ccagatggca aagcagggat gaggccctga
15651 cggggctgcc aggtggggga tggtgccgtg gggtcaggga tctgcaacgg
15701 cctcctcaca tgtgccccgc cggcttccgg cagCTGGCAG CCACCTGCAA
15751 CGTGGAGCCC TCACTTTTCA CCAACTGGTT CAGCGGGCAC CTCAACTTCC
15801 AGATCGAGCA CCAgtgagtg tgggtgctgg gggccagtgg gaggtgggga
15851 gggggtcctg ggaggggatc ctgggagggg acccgtgggt ggggcctctc

FIG.2F

```
15901  tctggaatct cccacttcag gtgccagcat acgctcccca cccccagCCT
15951  CTTCCCCAGG ATGCCGAGAC ACAACTACAG CCGGGTGGCC CCGCTGGTCA
16001  AGTCGCTGTG TGCCAAGCAC GGCCTCAGCT ACGAAGTGAA GCCCTTCCTC
16051  ACCGCGCTGG TGGACATCGT CAGgtgaggc tgcagcccgg cccctctgtt
16101  ctggtggctt ccccagggcc tatgcctacc cttgtccagg tcagcctcat
16151  gctgagcccc cagggtccct gagcctttct gtccacgtcc catgcccttc
16201  ctcccttccc cagccttcac gcacacagtg agaatttctg gagcacctac
16251  tgcagactca caaacagcag tgcctgcggt gagcaggtct atgcaaacct
16301  acccccaaag gctgagggaa aaaagctaac agatccagtt tctcagaagg
16351  aaacacttaa cagggactca taaacagaag ccatgtctca gggccgggtg
16401  cggtggctca cgcctgtaat tccagcactt ggggaggctg aggtgggcgg
16451  atcacttgag gtcaggagtt cgagaccagc ctggccaaca tggtgaaacc
16501  ccgtctctac taaaaaaaaa aaaaaaaaac aaaacaaaac aaaaattagc
16551  tgggtgtggt ggcaggtgcc cataatccca gctacttggg aggctgaggg
16601  aggagaatca cttgaactcg caggggcaga ggttgcagtg agctgagatt
16651  gtgcctttgc agtccagcct gggcaacaga gcaagactct ctcaaaaaca
16701  aacaaaaaaa ccatgtctca ggcagccaag agttgggaca tcccctcaca
16751  cgccctctag aaagaaccct ctatatagca agcttttagg gtgaacccca
16801  tgcaggtggt tcttatgaac ctggtgacca ctggaggtta gataagcgtc
16851  tacaagagga ggttatctat gccatgagct tggcattcag ggtcaagcat
16901  cggtcatcag acagttttgc ttgaagatgg cattgccctt gtagcaatgc
16951  aggctctaga gagcttcctg ccctcttgga gctgatgttc cttccagcaa
17001  aggaaacagc aagcaattaa aataacaaat aagtacatta cagaagatgg
17051  gcaaaagaac aatgaaaagc ccctcagggt ggggacaggg gaggggaggg
17101  gggcggccag gcaggggcgg cagtttctaa ataggtggta gggtgggcag
17151  tattgacagg ctgacgtgtg agcagggaca gggaggaggg gagaggtctc
17201  gccacaggga catctggcaa agagcgttca ggcagagggc acttgaccct
17251  gaatgccaag ctcatggcat agatagccga ggcaggcatg caggcactca
17301  gagaagggac acgcccggct tgcatcttgg aaagctgccc ctactgggaa
17351  tgactggcgg gcaggagtcg aagtggaaaa ggagagcaga ggacactgca
17401  gccatccagg cgaggggtga tggggctcag cccttgtggt caccttggag
17451  gtggggaaca gaggccagat tccaggtctt atacctctgc gcctttgtac
17501  acgctgttcc ccttacttgg ttgcccttcc ttcctgtgct ggtgttcaga
17551  tgcccacttc tccttcatga tctctcccag cctgatgctc tgagcccctg
17601  ccatttggca cagcccttta gagcgcctgg cacagggctt cctagcagat
17651  tgttgacatt tctggctcca ctgcccaata tcaggcccaa gatcgggtgg
17701  gcaggttcca cgtcctctct gtccttgggt tgcagcgccc agcaggaggc
17751  agcaatggag aactgggtgc aggagggaca ggcccaccca ggctcatgcc
17801  tggacttggc cttggctgcc ctccagctcc cctacccgac acccgtcacc
17851  ccggtctaga ttccattcca gagaatgagc attcagctgt tctcccaacc
17901  caccctccag cccgcatcgc tgcctgcccc cagggaaggg aacccacagg
17951  gaatggggat ctccgctcac acttaccatg ggggatacag gggtgttagg
18001  atcttgcaac tgagctccta acacccaccc ccactgccac ccccacctcc
18051  cagGTCCCTG AAGAAGTCTG GTGACATCTG GCTGGACGCC TACCTCCATC
18101  AGTGAAGGCA ACACCCAGGC GGGCAGAGAA GGGCTCAGGG CACCAGCAAC
18151  CAAGCCAGCC CCCGGCGGGA TCGATACCCC CACCCCTCCA CTGGCCAGCC
18201  TGGGGGTGCC CTGCCTGCCC TCCTGGTACT GTTGTCTTCC CCTCGGCCCC
18251  CTCACATGTG TATTCAGCAG CCCTATGGCC TTGGCTCTGG GCCTGATGGG
18301  ACAGGGGTAG AGGGAAGGTG AGCATAGCAC ATTTTCCTAG AGCGAGAATT
18351  GGGGGAAAGC TGTTATTTTT ATATTAAAAT ACATTCAGAT GTATTATGGA
18401  GT
```

FIG.2G

```
   1  CTTCGCTTCCCTCGGGGTCTTGCTCGGACCTCGGCCACCGCCTGGGATCC   50

  51  CCAGGACTCGTGCGTGCAGCATGGGCGGCGTCGGGGAGCCGGGACCGCGG  100
   1                      M  G  G  V  G  E  P  G  P  R     10

 101  GAGGGACCCGCGCAGCCGGGGGCACCGCTGCCCACCTTCTGCTGGGAGCA  150
  11  E  G  P  A  Q  P  G  A  P  L  P  T  F  C  W  E  Q    27

 151  GATCCGCGCGCACGACCAGCCCGGCGACAAGTGGCTGGTCATCGAGCGCC  200
  28  I  R  A  H  D  Q  P  G  D  K  W  L  V  I  E  R  R    44

 201  GCGTCTACGACATCAGCCGCTGGGCACAGCGGCACCCAGGGGGCAGCCGC  250
  45  V  Y  D  I  S  R  W  A  Q  R  H  P  G  G  S  R      60

 251  CTCATCGGCCACCACGGCGCTGAGGACGCCACGGATGCCTTCCGTGCCTT  300
  61  L  I  G  H  H  G  A  E  D  A  T  D  A  F  R  A  F    77

 301  CCATCAAGATCTCAATTTTGTGCGCAAGTTCCTACAGCCCCTGTTGATTG  350
  78  H  Q  D  L  N  F  V  R  K  F  L  Q  P  L  L  I  G    94

 351  GAGAGCTGGCTCCGGAAGAACCCAGCCAGGATGGACCCCTGAATGCGCAG  400
  95  E  L  A  P  E  E  P  S  Q  D  G  P  L  N  A  Q      110

 401  CTGGTCGAGGACTTCCGAGCCCTGCACCAGGCAGCCGAGGACATGAAGCT  450
 111  L  V  E  D  F  R  A  L  H  Q  A  A  E  D  M  K  L    127

 451  GTTTGATGCCAGTCCCACCTTCTTTGCTTTCCTACTGGGCCACATCCTGG  500
 128  F  D  A  S  P  T  F  F  A  F  L  L  G  H  I  L  A    144

 501  CCATGGAGGTGCTGGCCTGGCTCCTTATCTACCTCCTGGGTCCTGGCTGG  550
 145  M  E  V  L  A  W  L  L  I  Y  L  L  G  P  G  W      160

 551  GTGCCCAGTGCCCTGGCCGCCTTCATCCTGGCCATCTCTCAGGCTCAGTC  600
 161  V  P  S  A  L  A  A  F  I  L  A  I  S  Q  A  Q  S    177

 601  CTGGTGTCTGCAGCATGACCTGGGCCATGCCTCCATCTTCAAGAAGTCCT  650
 178  W  C  L  Q  H  D  L  G  H  A  S  I  F  K  K  S  W    194

 651  GGTGGAACCACGTGGCCCAGAAGTTCGTGATGGGGCAGCTAAAGGGCTTC  700
 195  W  N  H  V  A  Q  K  F  V  M  G  Q  L  K  G  F      210
```

FIG.3A

```
701  TCCGCCCACTGGTGGAACTTCCGCCACTTCCAGCACCACGCCAAGCCCAA  750
211  S  A  H  W  W  N  F  R  H  F  Q  H  H  A  K  P  N   227

751  CATCTTCCACAAAGACCCAGACGTGACGGTGGCGCCCGTCTTCCTCCTGG  800
228   I  F  H  K  D  P  D  V  T  V  A  P  V  F  L  L  G  244

801  GGGAGTCATCCGTCGAGTATGGCAAGAAGAAACGCAGATACCTACCCTAC  850
245   E  S  S  V  E  Y  G  K  K  K  R  R  Y  L  P  Y   260

851  AACCAGCAGCACCTGTACTTCTTCCTGATCGGCCCGCCGCTGCTCACCCT  900
261  N  Q  Q  H  L  Y  F  F  L  I  G  P  P  L  L  T  L  277

901  GGTGAACTTTGAAGTGGAAAATCTGGCGTACATGCTGGTGTGCATGCAGT  950
278   V  N  F  E  V  E  N  L  A  Y  M  L  V  C  M  Q  W  294

951  GGGCGGATTTGCTCTGGGCCGCCAGCTTCTATGCCCGCTTCTTCTTATCC  1000
295   A  D  L  L  W  A  A  S  F  Y  A  R  F  F  L  S   310

1001 TACCTCCCCTTCTACGGCGTCCCTGGGGTGCTGCTCTTCTTTGTTGCTGT  1050
311  Y  L  P  F  Y  G  V  P  G  V  L  L  F  F  V  A  V  327

1051 CAGGGTCCTGGAAAGCCACTGGTTCGTGTGGATCACACAGATGAACCACA  1100
328   R  V  L  E  S  H  W  F  V  W  I  T  Q  M  N  H  I  344

1101 TCCCCAAGGAGATCGGCCACGAGAAGCACCGGGACTGGGTCAGCTCTCAG  1150
345   P  K  E  I  G  H  E  K  H  R  D  W  V  S  S  Q   360

1151 CTGGCAGCCACCTGCAACGTGGAGCCCTCACTTTTCACCAACTGGTTCAG  1200
361  L  A  A  T  C  N  V  E  P  S  L  F  T  N  W  F  S  377

1201 CGGGCACCTCAACTTCCAGATCGAGCACCACCTCTTCCCCAGGATGCCGA  1250
378   G  H  L  N  F  Q  I  E  H  H  L  F  P  R  M  P  R  394

1251 GACACAACTACAGCCGGGTGGCCCCGCTGGTCAAGTCGCTGTGTGCCAAG  1300
395   H  N  Y  S  R  V  A  P  L  V  K  S  L  C  A  K   410

1301 CACGGCCTCAGCTACGAAGTGAAGCCCTTCCTCACCGCGCTGGTGGACAT  1350
411  H  G  L  S  Y  E  V  K  P  F  L  T  A  L  V  D  I  427

1351 CGTCAGGTCCCTGAAGAAGTCTGGTGACATCTGGCTGGACGCCTACCTCC  1400
428   V  R  S  L  K  K  S  G  D  I  W  L  D  A  Y  L  H  444
```

FIG.3B

```
1401  ATCAGTGAAGGCAACACCCAGGCGGGCAGAGAAGGGCTCAGGGCACCAGC  1450
 445    Q                                                  445

1451  AACCAAGCCAGCCCCCGGCGGGATCGATACCCCCACCCCTCCACTGGCCA  1500

1501  GCCTGGGGGTGCACTGCCTGCCCTCCTGGTACTGTTGTCTTCCCCTCGGC  1550

1551  CCCCTCACATGTGTATTCAGCAGCCCTATGGCCTTGGCTCTGGGCCTGAT  1600

1601  GGGACAGGGGTAGAGGGAAGGTGAGCATAGCACATTTTCCTAGAGCGAGA  1650

1651  ATTGGGGGAAAGCTGTTATTTTTATATTAAAATACATTCAGATGTAAAAA  1700
```

FIG.3C

```
  1  GTACAGCGGCAATGGGCGGTGTCGGGGAGCCCGGAGGGGGACTCGGGCCG   50
  1              M  G  G  V  G  E  P  G  G  G  L  G  P     13

 51  CGGGAGGGGCCCGCACCGCTGGGGGCGCCCCTACCCATCTTCCGCTGGGA  100
 14  R  E  G  P  A  P  L  G  A  P  L  P  I  F  R  W  E   30

101  GCAGATCCGCCAGCATGACCTACCAGGCGACAAGTGGCTGGTCATCGAGC  150
 31   Q  I  R  Q  H  D  L  P  G  D  K  W  L  V  I  E  R  47

151  GCCGTGTCTACGACATCAGCCGCTGGGCACAGCGGCACCCAGGGGGTAGC  200
 48    R  V  Y  D  I  S  R  W  A  Q  R  H  P  G  G  S    63

201  CGCATCATCGGCCACCACGG  220
 64  R  I  I  G  H  H      69
```

FIG.4

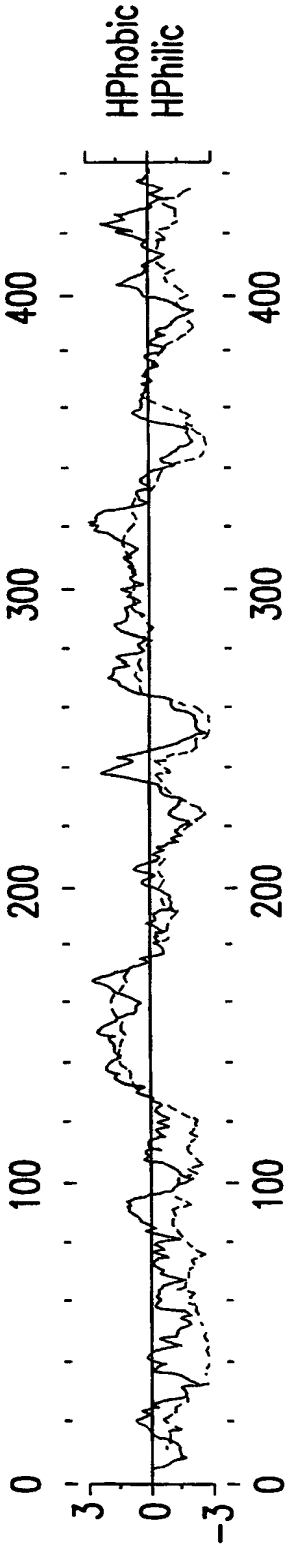

HPhobic
HPhilic
0
100
200
300
400
3
0
-3

FIG.5A

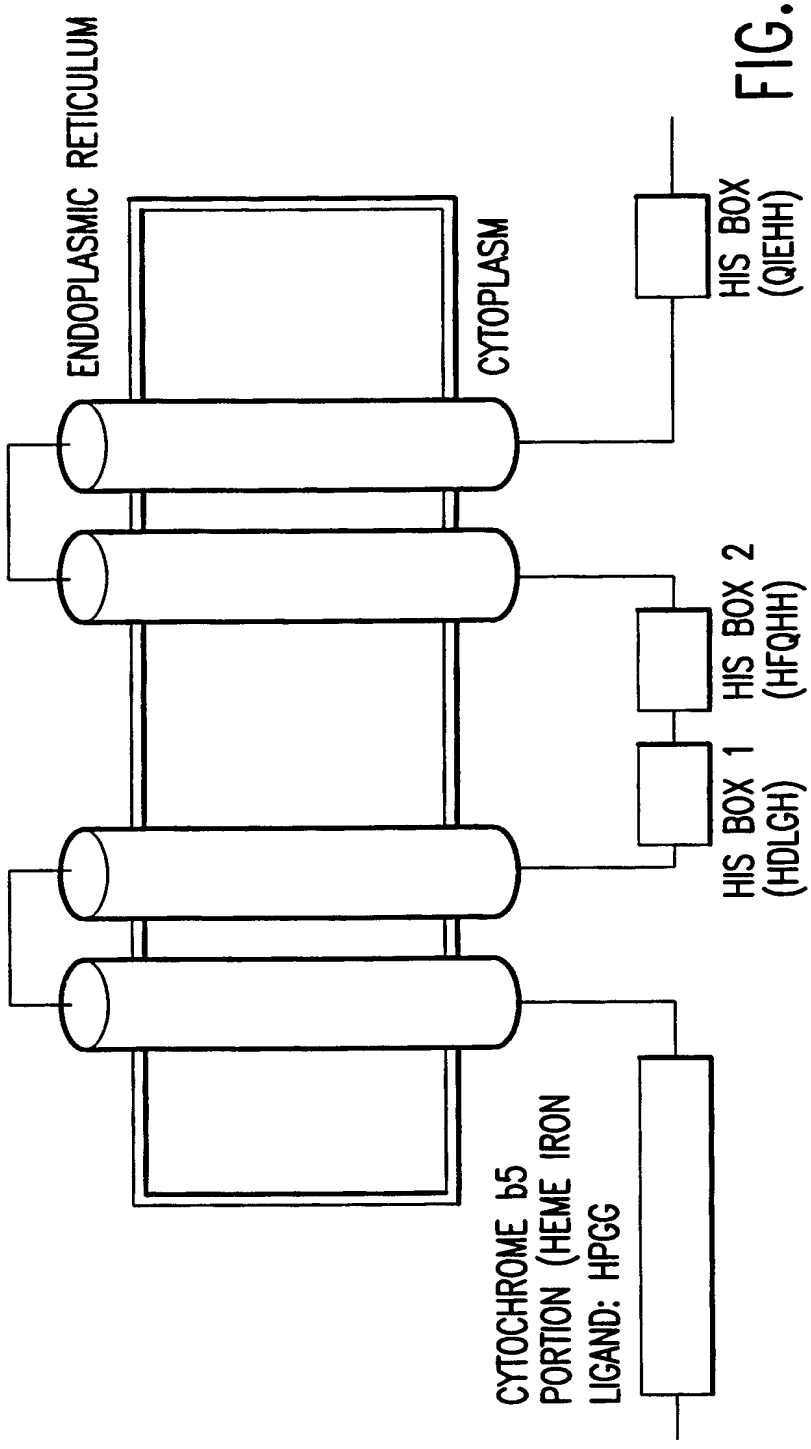

ENDOPLASMIC RETICULUM
CYTOPLASM
HIS BOX (QIEHH)
HIS BOX 2 (HFQHH)
HIS BOX 1 (HDLGH)
CYTOCHROME b5
PORTION (HEME IRON
LIGAND: HPGG

FIG.5B

```
PROFILESCAN of : CYB5rp_correct_protein check: 5714 from: 1 to: 445

GETSEQ from bmd, December 2, 1997 14:20.

Compare to profile library: GenRunData:profilescan.fil
..
-------------------------------------------------------------------------

Profile: profiledir:cytochrome_b5.prf
  Gap weight:  4.50     Gap Length weight:  0.05
  Ave match:   0.27     Ave mismatch      : -0.21
(Peptide) PROFILEMAKE v4.40 of: 0191.Msf2{*} Length: 48
  Sequences: 24  MaxScore: 27.58  December 2, 1992 00:07
This profile is derived from PROSITE release 10.0 and has been tested
by a database search against SWISS-PROT release 26.0. A comparison
of the SWISS-PROT annotation and the results of the database search follows.
For further information about this motif, consult the . . .

Profile: profiledir:cytochrome_b5.prf alignment: 1

 Quality: 20.77    Gaps: 0
    Ratio: 0.43  Length: 48
 Normalized quality: 2.91

S     31 HDQPGDKWLVIERRVYDISRWAQRHPGGSRLIGHHGAEDATDAFRAFH 78
         |: ..: ||||. .|||:::| . ||||.  |  .||.|:||.| ::|
P      1 HNDGEETWLVVNGQVYDITKFLEEHPGGPDVIMEAAGTDATEEFEAIH 48

**********************************************************
*Cytochrome b5 family, heme-binding domain signature *
**********************************************************
```

FIG.6

```
pir:s68358  hypothetical protein - common sunflower
 Length = 458

 Score = 169 (79.4 bits), Expect = 2.8e-42, Sum P(4) = 2.8e-42
 Identities = 31/85 (36%), Positives = 49/85 (57%)
                                                            His box 3
Query:   348 IGHEKHRDWVSSQLAATCNVEPSLFTNWFSGHLNFQIEHHLFPRMPRHNYSRVAPLVKSL 407
             +G  K  +W   Q   T ++  S + +WF G L FQ+EHHLFPR+PR +   ++P+ + L
Sbjct:   348 VGPPKGDNWFEKQTRGTIDIACSSWMDWFFGGLQFQLEHHLFPRLPRCHLRSISPICREL 407

Query:   408 CAKHGLSYEVKPFLTALVDIVRSLK 432
             C K+ L Y    F  A V  +++L+
Sbjct:   408 CKKYNLPYVSLSFYDANVTTLKTLR 432

 Score = 133 (62.5 bits), Expect = 2.8e-42, Sum P(4) = 2.8e-42
 Identities = 21/53 (39%), Positives = 35/53 (66%)
                                         HPGG motif
Query:    26 EQIRAHDQPGDKWLVIERRVYDISRWAQRHPGGSRLIGHHGAEDATDAFRAFH 78
             ++++ H+ P D W+ I  +VY+++ WA+ HPGG  + +   +D TDAF AFH
Sbjct:    22 KELKKHNNPNDLWISILGKVYNVTEWAKEHPGGDAPLINLAGQDVTDAFIAFH 74

 Score = 118 (55.5 bits), Expect = 2.8e-42, Sum P(4) = 2.8e-42
 Identities = 25/76 (32%), Positives = 34/76 (44%)
                          His box 1                                 His box 2
Query:   165 LAAFILAISQAQSWCLQHDLGHASIFKKSWWNHVAQKFVMGQLKGFSAHWWNFRHFQHEA 224
             L+  IL ++  Q   L HD GH  +     WN  A  F+    + G S  WW + H  HH
Sbjct:   152 LSGAILGLAWMQIAYLGHDAGHYQMMATRGWNKFAGIFIGNCITGISIAWWKWTHNAHHI 211

Query:   225 KPNIFHKDPDVTVAPV 240
               N    DPD+   P+
Sbjct:   212 ACNSLDYDPDLQHLPM 227

 Score = 34 (16.0 bits), Expect = 2.8e-42, Sum P(4) = 2.8e-42
 Identities = 7/14 (50%), Positives = 9/14 (64%)
```

FIG. 7A

gp:bou79010_1 PID:g2062403 Borago officinalis delta 6 desaturase mRNA, complete cds. (gb:U79010) (NID:2062402)
Length = 448

Score = 179 (84.1 bits), Expect = 2.3e-42, Sum P(3) = 2.3e-42
Identities = 34/87 (39%), Positives = 48/87 (55%)

His box 3

```
Query:   348 IGHEKHRDWVSSQLAATCNVEPSLFTNWFSGHLNFQIEHHLFPRMPRHNYSRVAPLVKSL 407
             +G  K  +W   Q   T ++    + +WF G L FQIEHHLFP+MPR N  +++P V  L
Sbjct:   338 VGKPKGNNWFEKQTDGTLDISCPPWMDWFHGGLQFQIEHHLFPKMPRCNLRKISPYVIEL 397

Query:   408 CAKHGLSYEVKPFLTALVDIVRSLKKS 434
             C KH L Y    F  A     +R+L+ +
Sbjct:   398 CKKHNLPYNYASFSKANEMTLRTLRNT 424
```

Score = 144 (67.7 bits), Expect = 2.3e-42, Sum P(3) =2.3e-42
Identities = 23/53 (43%),Positives = 36/53 (67%)

HPGG MOTIF

```
Query:    26 EQIRAHDQPGDKWLVIERRVYDISRWAQRHPGGSRLIGHHGAEDATDAFRAFH 78
             ++++ HD+PGD W+ I+ + YD+S W + HPGGS +     ++ TDAF AFH
Sbjct:    12 DELKNHDKPGDLWISIQGKAYDVSDWVKDHPGGSFPLKSLAGQEVTDAFVAFH 64
```

Score = 105 (49.3 bits), Expect = 2.3e-42, Sum P(3) = 2.3e-42
Identities = 22/68 (32%), Positives = 28/68 (41%)

His box 1 His box 2

```
Query:   176 QSWCLQHDLGHASIFKKSWWNHVAQKFVMGQLKGFSAHWWNFRHFQHHAKPNIFHKDPDV 235
             QS  + HD GH  +   S N     F    L G S  WW + H  HH   N    DPD+
Sbjct:   153 QSGWIGHDAGHYMVVSDSRLNKFMGIFAANCLSGISIGWWKWNHNAHHIACNSLEYDPDL 212

Query:   236 TVAPVFLL 243
                 p  ++
Sbject:  213 QVIPFLVV 220
```

FIG. 7B

pir:s35157 Delta(6)-desaturase - Synechocystis sp.
Length = 359

Score =126 (59.2 bits), Expect = 9.0e-09, Sum P(2) = 9.0e-09
Identities = 21/54 (38%), Positives = 33/54 (61%)

His box 3

```
Query:   372 FTNWFSGHLNFQIEHHLFPRMPRHNYSRVAPLVKSLCAKHGLSYEVKPFLTALV 425
             F NMF G LN Q+ HHLFP +   +Y ++  ++K +C + G+ Y+V P    A +
Sbjct:   292 FWNWFCGGLNHQVTHHLFPNICHIHYPQLENIIKDVCQEFGVEYKVYPTFKAAI 345
```

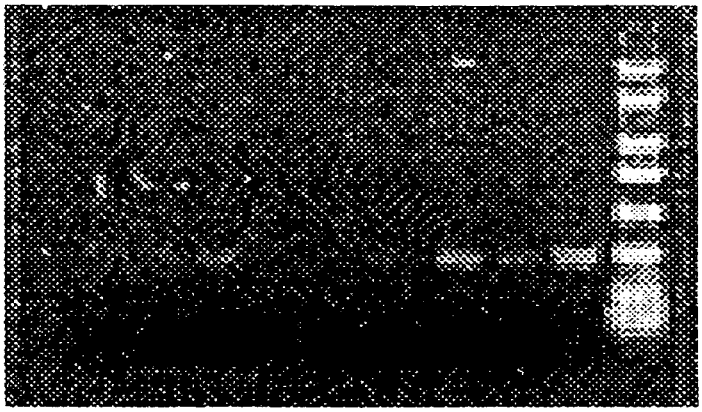
Score = 36 (16.9 bits), Expect = 9.0e-09, Sum P(2) = 9.0e-09
Identities = 6/15 (40%), Positives = 8/15 (53%)

His box 2

```
Query:   209 GFSAHWWNFRHFQHH 223
             G S+ W +RH   H
Sbjct:   113 GLSSFLWRYRHNYLH 127
```

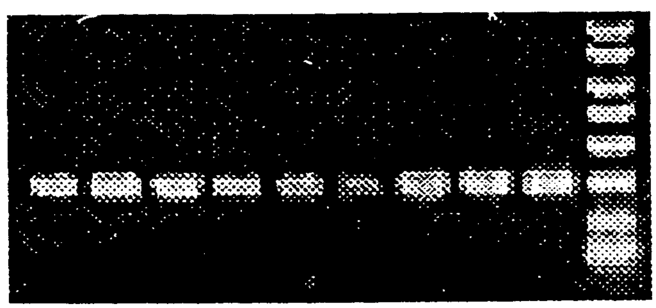
FIG.8

1 2 3 4 5 6 7 8 9



1. Heart
2. Brain
3. Placenta
4. Lung
5. Liver
6. Skeletal Muscle
7. Kidney
8. Pancreas
9. Retina

FIG.9A



1. Heart
2. Brain
3. Placenta
4. Lung
5. Liver
6. Skeletal Muscle
7. Kidney
8. Pancreas
9. Retina

FIG.9B